

## WHAT ARE NITRATES?

Nitrates ( $\text{NO}_3$ ) are an essential source of nitrogen (N) for plants. When nitrogen fertilizers are used to enrich soils, nitrates may be carried by rain, irrigation and other surface waters through the soil into ground water. Human and animal wastes also contribute to nitrate contamination of ground water. In Benton and Franklin Counties, agricultural practices have



been linked to elevated levels of nitrates in drinking water. Although any well can become contaminated by

nitrates, shallow, poorly constructed, or improperly located wells are more likely to be contaminated. Nitrate levels in drinking water can also be an indicator of overall water quality. Elevated nitrate levels may suggest the possible presence of other contaminants such as disease-causing organisms, pesticides or other inorganic and organic compounds that could cause health problems.

## INFANTS AT RISK

The maximum safe level of nitrates in drinking water is 10 mg/L (or reported as 10 parts per million). Nitrate levels at or above this level could potentially lead to a fatal blood disorder in infants under six months of age called methemoglobinemia or “blue-baby syndrome”. This syndrome reduces the ability of the baby’s blood to carry

oxygen. The symptoms of blue-baby syndrome can be subtle and often confused with other illnesses. Symptoms may include diarrhea, vomiting, and inactivity. In more serious cases, infants will show symptoms of cyanosis in which the skin, lips or nails may develop a slate-gray or bluish color and the infant could have trouble breathing. A sample of the infant’s blood can easily confirm a diagnosis of blue-baby syndrome. It is difficult to determine the true number of blue-baby syndrome cases in Washington State because doctors are not required to report the illness.



Others at risk from excess nitrates in drinking water are:

- Pregnant women,
- Individuals with reduced gastric acidity, and
- Individuals with a hereditary lack of the enzyme methemoglobin reductase.

In addition, some health studies have suggested that exposure to high levels of nitrates could lead to certain types of cancer, but results are inconclusive.

## TESTING YOUR DRINKING WATER

The only way to know if the drinking water from your well contains high levels of nitrates is to have a sample tested at a laboratory such as the Benton-Franklin Health District

laboratory. Collection bottles, along with instructions, are available at any Benton-Franklin Health District office. Call for current fee information.

Your well water should be tested more often if you live in an area with a



***It is recommended that well water be tested for nitrate at least once every three years.***

history of high nitrate levels or if someone in your home is at risk from high nitrate levels.

## WHAT CAN YOU DO IF YOUR WATER HAS HIGH NITRATES?

If your drinking water sample results are at or above 10 mg/L for nitrate, you will need to decide whether or not to continue using the water for drinking and cooking. If someone in your home is at risk of developing health problems due to high nitrates in drinking water, it is recommended that that person not consume the water. Do not use the water to make infant formula for children under 6 months of age. Find a safe, alternative water supply (such as bottled water) until you decide on a more permanent solution.

There is no simple way to remove nitrates from water. Finding and eliminating the source of nitrate contamination is the best long-term solution, but usually this is not a feasible solution. Although it is

common to think of boiling or softening as a means of purifying water, these methods do not reduce nitrates in drinking water. In fact, boiling water can actually increase nitrate levels. Furthermore, activated carbon and other simple filters do not remove nitrates to any significant degree. Home treatment units such as reverse osmosis, ion exchange and distillation can remove nitrates from water. But these units vary in their effectiveness and *must* be maintained properly.

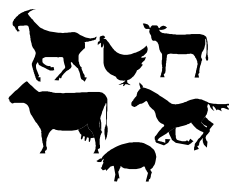
Your only permanent option may be to find a new source of water. This can be achieved by either drilling a new well or connecting to a public water supply system that has acceptable nitrate levels.

When selecting a new well site (or looking for sources of nitrate contamination around your existing well), be sure to consider ALL potential sources of contamination. Unlike other contaminants, nitrates are not diluted and filtered out as water travels through soil. **Therefore, water wells:**

- must be separated from possible sources of nitrate contamination, including both leaching and surface drainage, such as barnyard runoff;
- should never be within 100 feet of a septic system; and
- should have a sanitary seal specifically designed for the top of the well casing. This surface seal must be correctly positioned, and

properly sealed, to disallow the entrance of any potential contaminant into the well casing. For additional protection, the well head should extend 6 to 12 inches above the ground surface.

In addition, inspect surrounding areas within a 100 foot radius of the well for sources of pollution such as garbage, animal pens, barns and especially agricultural areas where nitrogen fertilizers can contaminate ground water (including your home garden).



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## The Single Family Well

### Nitrates

